

# [METHOD FOR FABRICATING LOCALLY STRAINED CHANNEL ]

## Abstract

A manufacturing method for a semiconductor device is provided, wherein a silicon germanium ( $\text{Si}_{1-x}\text{Ge}_x$ ; SiGe) layer and a strained silicon layer are sequentially formed on a semiconductor substrate. A gate oxide layer and a gate structure are further formed on the strained silicon layer. The gate structure and the strained silicon layer are heavily doped with n-type dopants to form a compressed gate and source/drain regions, respectively. A cap layer is further formed over the semiconductor substrate, followed by conducting an annealing process. The cap layer is subsequently removed.